CSMLS SCSLM

Canadian Society for Medical Laboratory Science
Société canadienne de science de laboratoire médical

CSMLS Competency Profile
General Medical Laboratory Technologist

Competencies Expected of an Entry-Level General Medical Laboratory Technologist

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Code of Professional Conduct

- Medical laboratory professionals are dedicated to serving the health care needs of the public. The welfare of the patient and respect for the dignity of the individual shall be paramount at all times.
- Medical laboratory professionals work with other health care professionals, to provide effective patient care.
- Medical laboratory professionals shall promote the image and status of their profession by maintaining high standards in their professional practice and through active support of their professional bodies.
- Medical laboratory professionals shall protect the confidentiality of all patient information.
- Medical laboratory professionals shall take responsibility for their professional acts.
- Medical laboratory professionals shall practise within the scope of their professional competence.
- Medical laboratory professionals shall endeavour to maintain and improve their skills and knowledge and keep current with scientific advances. They will uphold academic integrity in all matters of professional certification and continuing education.
- Medical laboratory professionals shall share their knowledge with colleagues and promote learning.
- Medical laboratory professionals shall be aware of the laws and regulations governing medical laboratory technology and shall apply them in the practice of their profession.
- Medical laboratory professionals shall practise safe work procedures at all times to ensure the safety of patients and co-workers and the protection of the environment.

Examination Blueprint

CSMLS General MLT exams are based on this plan.

Category		Mark %
1.	**Safe Work Practices**	5-7%
2.	**Data and Specimen Collection and Handling**	5-7%
3.	**Analytical Processes**	30-35%
4.	**Interpretation and Reporting of Results**	20-25%
5.	**Quality Management**	20-25%
6.	**Critical Thinking**	5-10%
7.	**Communication and Interaction**	3-5%
8.	**Professional Practice**	5-7%

Assumptions about Medical Laboratory Science

The Medical Laboratory Technologist

Upon successful completion of both an accredited program/CSMLS prior learning assessment and the CSMLS national certification examinations, the Medical Laboratory Technologist:

- has developed a broad knowledge base and practical skills that enable them to analyze specimens, assess and report laboratory results according to institutional policies and professional standards
- applies critical thinking and problem solving strategies to ensure best practices
- practices and promotes the principles of continuous quality improvement including professional development and using personal initiative to improve laboratory practice
- practices to ensure the safety of patients, colleagues, self, and the environment
- contributes to the health care and education of the public, promotes patient welfare and respects patient diversity, dignity, and confidentiality
- is an integral member of the health care team who shares knowledge that is essential to the prevention, diagnosis, treatment and monitoring of disease, promotes learning, and collaborates with other professionals in providing effective patient care
- is responsible and accountable for professional acts and practices according to standards of practice as well as legislation and regulations governing the profession
- abides by the CSMLS Code of Professional Conduct
- uses effective interpersonal skills to maintain a professional relationship with colleagues, patients/clients and health care professionals
- uses all available resources to provide service in a timely, accurate, and cost-effective manner.

The Client/Patient

The client/patient is any individual who interacts with the medical laboratory technologist, e.g. patient, patient representative, health care professionals, other laboratory professionals.

The Environment

The Medical Laboratory Technologist is prepared to work in a variety of settings including, but not limited to, hospitals, private and government laboratories, industry, and educational institutions.

The Medical Laboratory Technologist practices in a safe environment that is dynamic and evolving.

General MLT Competency Categories

Categories		Description
1.	**Safe Work Practices**	The medical laboratory technologist conducts their professional practice according to established protocols, safety guidelines, and existing legislation.
2.	**Data and Specimen Collection and Handling**	The medical laboratory technologist verifies relevant data and ensures that appropriate specimens are collected and handled according to established protocols.
3.	**Analytical Processes**	The medical laboratory technologist understands the principles and performs analytical techniques and assesses results on a variety of specimens. **NOTE**: The term "common" is used in reference to blood group antigens, micro-organisms, etc. and should be interpreted as those which occur frequently in the population and are encountered on a regular basis in clinical practice. The competencies should be interpreted in their broadest sense and not limited by the concept of the five laboratory disciplines.
4.	**Interpretation and Reporting of Results**	The medical laboratory technologist uses scientific knowledge and skills to interpret, document and report laboratory results according to established protocols.
5.	**Quality Management**	The medical laboratory technologist practices and promotes the principles of quality management.
6.	**Critical Thinking**	The medical laboratory technologist applies critical thinking skills to constructively investigate, evaluate and problem solve.
7.	**Communication and Interaction**	The medical laboratory technologist interacts using effective communication, teamwork skills and interprofessional collaboration with patients/clients and other health care professionals.
8.	**Professional Practice**	The medical laboratory technologist meets the legal and ethical requirements of practice and protects the patient's right to a reasonable standard of care. Professional responsibility encompasses scope of practice, accountability, and professional development.

Category 1: Safe Work Practices

The medical laboratory technologist conducts their professional practice according to established protocols, safety guidelines, and existing legislation.

Number	Competency
1.01	Applies the principles of routine practices
1.02	Uses personal protective equipment, e.g. gloves, gowns, mask, face shields, aprons
1.03	Applies laboratory hygiene and infection control practices
1.04	Minimizes possible dangers from biological specimens, laboratory supplies and equipment
1.05	Uses laboratory safety devices, e.g. biological safety cabinets, fume hoods, laminar flow cabinets, safety pipetting devices, safety containers and carriers, safety showers, eye washes
1.06	Labels, dates, handles, stores, and disposes chemicals, dyes, reagents, and solutions according to legislation, e.g. WHMIS
1.07	Handles and disposes sharps
1.08	Stores, handles, transports and disposes biological and other hazardous materials according to legislation
1.09	Uses disinfection and sterilization methods
1.10	Minimizes potential hazards related to disinfection/sterilization methods
1.11	Applies measures in response to laboratory accidents/incidents
1.12	Applies spill containment and clean up procedures for biological and other hazardous materials
1.13	Responds appropriately to workplace emergencies
1.14	Reports and documents all incidents related to safety and personal injury
1.15	Applies proper ergonomic principles to minimize risk of injury

Category 2: Data and Specimen Collection and Handling

The medical laboratory technologist verifies relevant data and ensures that appropriate specimens are collected and handled according to established protocols.

Number	Competency
2.01	Verifies relevant information is provided for test request
2.02	Provides information to the client on specimen collection, transportation and storage
2.03	Confirms the identity of the patient and performs venipuncture and capillary blood collection to obtain appropriate samples for laboratory analysis
2.04	Performs sample collection and chain of custody procedures relating to specimens with legal implications
2.05	Adheres to established protocols for labeling and traceability of specimens
2.06	Delivers specimens taking into account priority and stability
2.07	Assesses suitability of the specimen for testing
2.08	Verifies that the pertinent data on the specimen and requisition correspond
2.09	Accessions specimens into laboratory information systems
2.10	Adheres to guidelines for specimen retention, storage, transportation and disposal
2.11	Prepares specimens for analysis
2.12	Identifies, documents and initiates corrective action for pre-examination (pre-analytical) errors

Category 3: Analytical Processes

The medical laboratory technologist understands the principles and performs analytical techniques and assesses results on a variety of specimens.

Number	Competency
3.01	Applies the principles of microscopy: • bright field • fluorescence • polarizing • inverted
3.02	Applies the physical and chemical principles of staining
3.02.01	Assesses the quality of staining and initiates corrective action
3.03	Applies principles of light measuring systems used in common instruments: • absorption spectrophotometry • reflectometry • turbidimetry
3.03.01	Assesses results, identifies sources of interference and initiates corrective action
3.04	Applies principles of electrochemical systems used in common instruments: • ion selective electrodes • conductance electrodes
3.04.01	Assesses results, identifies sources of interference and initiates corrective action
3.05	Applies principles of electrophoresis and chromatography
3.05.01	Assesses results, identifies sources of interference and initiates corrective action
3.06	Applies principles of osmometry
3.06.01	Assesses results, identifies sources of interference and initiates corrective action
3.07	Applies principles of immunoassays
3.07.01	Assesses results, identifies sources of interference and initiates corrective action
3.08	Demonstrates knowledge of principles of mass spectrometry
3.08.01	Assesses results, identifies sources of interference and initiates corrective action

3.09	Applies principles of particle analysis used in common hematology instrumentation
3.09.01	Assesses results, identifies sources of interference and initiates corrective action and/or follow up testing
3.09.02	Performs manual counting procedures
3.10	Demonstrates the knowledge of principles of flow cytometry
3.10.01	Assesses results, indenties sources of interference and initiates corrective action
3.11	Applies the principles of hemostasis to perform coagulation testing
3.11.01	Assesses results, identifies sources of interference and initiates corrective action and/or follow up testing
3.12	Performs qualitative and quantitative biochemical analyses
3.12.01	Assesses results, identifies sources of interference and initiates corrective action and/or follow up testing
3.13	Prepares blood, body fluids and other clinical specimens for microscopic examination
3.14	Identifies and evaluates the morphology of cellular and non-cellular elements in microscopic preparations
3.14.01	Differentiates between clinically significant and insignificant findings
3.14.02	Assesses results, identifies sources of interference and initiates corrective action and/or follow up testing
3.15	Applies principles of immunology to the detection of antigens and antibodies
3.16	Performs testing to identify common red blood cell antigens and antibodies
3.16.01	Interprets results to determine phenotype/genotype
3.16.02	Differentiates between clinically significant and insignificant antibodies
3.16.03	Performs compatibility analyses
3.16.04	Assesses results, identifies sources of interference and initiates corrective action and/or follow up testing
3.17	Prepares and issues blood products
3.17.01	Assesses compatibility of donor/product
3.17.02	Ensures proper storage of blood products
3.17.03	Evaluates the quality of blood products
3.17.04	Evaluates the appropriateness of the blood product for the patient's clinical situation

3.18	Describes and investigates the adverse effects of transfusion according to established protocol and initiates follow-up action
3.19	Performs analyses to detect and identify common clinically significant micro-organisms
3.19.01	Selects appropriate culture media and environment for isolation
3.19.02	Describes common clinically significant micro-organisms according to body site
3.19.03	Confirms identification using staining techniques, biochemical, serological and automated testing methods
3.19.04	Applies the principles of instrumentation to the detection of micro-organisms
3.20	Performs antimicrobial susceptibility analyses
3.20.01	Assesses results, identifies sources of error and initiates corrective action and/or follow up testing
3.21	Applies molecular diagnostic principles to identify nucleic acid sequences
3.21.01	Assesses results, identifies sources of interference/errors, initiates corrective action and/or follow up testing
3.22	Performs tissue preparation techniques: • Grossing • Processing • Embedding • Sectioning (paraffin and frozen)
3.22.01	Assesses quality of the preparation and initiates corrective action and/or follow up
3.23	Performs techniques to demonstrate cellular and non-cellular components in tissue and body fluids
3.23.01	Assesses quality of the technique and initiates corrective action and/or follow up
3.24	Operates and maintains standard laboratory equipment/instruments
3.24.01	Prepares reagents, calibrators, standards and quality control materials
3.25	Describes the role of the laboratory in point-of-care testing
3.25.01	Performs point-of-care techniques, assesses results, identifies sources of interference and initiates corrective action

Category 4: Interpretation and Reporting of Results

The medical laboratory technologist uses scientific knowledge and skills to interpret, document and report laboratory results according to established protocols.

Number	Competency
4.01	Recognizes the relationship between analyses, diagnoses, clinical information and treatment by assessing results on the basis of: • specimen integrity • reference values • critical values • method limitations, e.g. dynamic ranges, interferences, specificity, sensitivity • patient delta checks • clinical conditions • other laboratory findings
4.02	Reports results that meet quality control criteria
4.03	Identifies unexpected or implausible results and takes appropriate action prior to reporting
4.04	Recognizes and acts on critical values
4.05	Documents results accurately
4.06	Accounts for all tests requested

Category 5: Quality Management

The medical laboratory technologist practises and promotes the principles of quality management.

Number	Competency
5.01	Demonstrates knowledge of quality systems essentials (QSE)
5.02	Follows established protocols as defined in policy, process and procedure manuals
5.03	Assesses quality control data and calibration data
5.04	Uses statistics to monitor and track the acceptability of quality control results
5.05	Identifies, documents and reports deficiencies that may affect the quality of testing
5.06	Performs and documents preventative maintenance according to established protocols
5.07	Recognizes malfunctions in equipment/instruments, initiates and documents corrective action
5.08	Participates in continuous quality improvement activities
5.09	Demonstrates knowledge of risk management
5.10	Participates in internal and external quality assurance activities, e.g. proficiency testing, audits, accreditation
5.11	Demonstrates knowledge of inventory maintenance
5.12	Demonstrates information management skills, e.g. computer, laboratory information systems and related technology

Category 6: Critical Thinking

The medical laboratory technologist applies critical thinking skills to constructively investigate, evaluate and problem solve.

Number	Competency
6.01	Demonstrates knowledge of a dynamic environment; adapts and responds to change
6.02	Recognizes that change initiated in one area may impact other areas of health care services
6.03	Engages in reflective practice; stops and thinks about practice, consciously analyzes decision making and draws conclusions to improve future practice
6.04	Organizes work to accommodate priorities
6.05	Maximizes efficient use of resources, e.g. time, equipment, personnel
6.06	Demonstrates effective problem solving/trouble-shooting strategies and initiates appropriate follow up
6.07	Contributes to implementation strategies that integrate timelines, resource management and communication related to projects or research/studies
6.08	Practices evidence-based decision-making skills such as literature review, data analysis and research methodologies/studies

Category 7: Communication and Interaction

The medical laboratory technologist interacts using effective communication, teamwork skills and interprofessional collaboration with patients/clients and other health care professionals.

Number	Competency
7.01	Practices effective communication with colleagues, patients/clients and other health care professionals: • Active listening • Verbal communication • Non-verbal communication • Written communication • Conflict management • Identifying barriers to effective communication • Using technology appropriately to facilitate communication
7.02	Demonstrates effective teamwork skills
7.03	Demonstrates interdisciplinary/interprofessional team skills: • Communication • Collaboration • Role clarification • Reflection
7.04	Demonstrates adaptive skills when interacting with patients/clients

Category 8: Professional Practice

The medical laboratory technologist meets the legal and ethical requirements of practice and protects the patient's right to a reasonable standard of care. Professional responsibility encompasses scope of practice, accountability, and professional development.

Number	Competency
8.01	Maintains confidentiality of healthcare information
8.02	Complies with legislations that govern medical laboratory technology
8.03	Recognizes limitations of own competence and seeks action to resolve
8.04	Obtains informed consent prior to procedure and respects a patient's right to refuse
8.05	Recognizes potentially dangerous situations and understands the right to refuse unsafe work
8.06	Takes responsibility and is accountable for professional actions
8.07	Recognizes the need for and participates in continuing education and training
8.08	Promotes the image and status of the profession of medical laboratory science as members of the health care team
8.09	Recognizes how ethical issues in the health care environment affect the medical laboratory technologist and clients
8.10	Demonstrates knowledge of the health care system, professional laboratory organizations and their responsibilities
8.11	Demonstrates knowledge of the determinants of health and their implications for the laboratory system
8.12	Respects the diversity, dignity, values, and beliefs of patients/clients and colleagues
8.13	Demonstrates knowledge of interpersonal skills: • Recognizes signs of individual and group stress • Recognizes signs of patient stress • Exhibits empathy when assisting patients and colleagues

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